

DOT 1634260

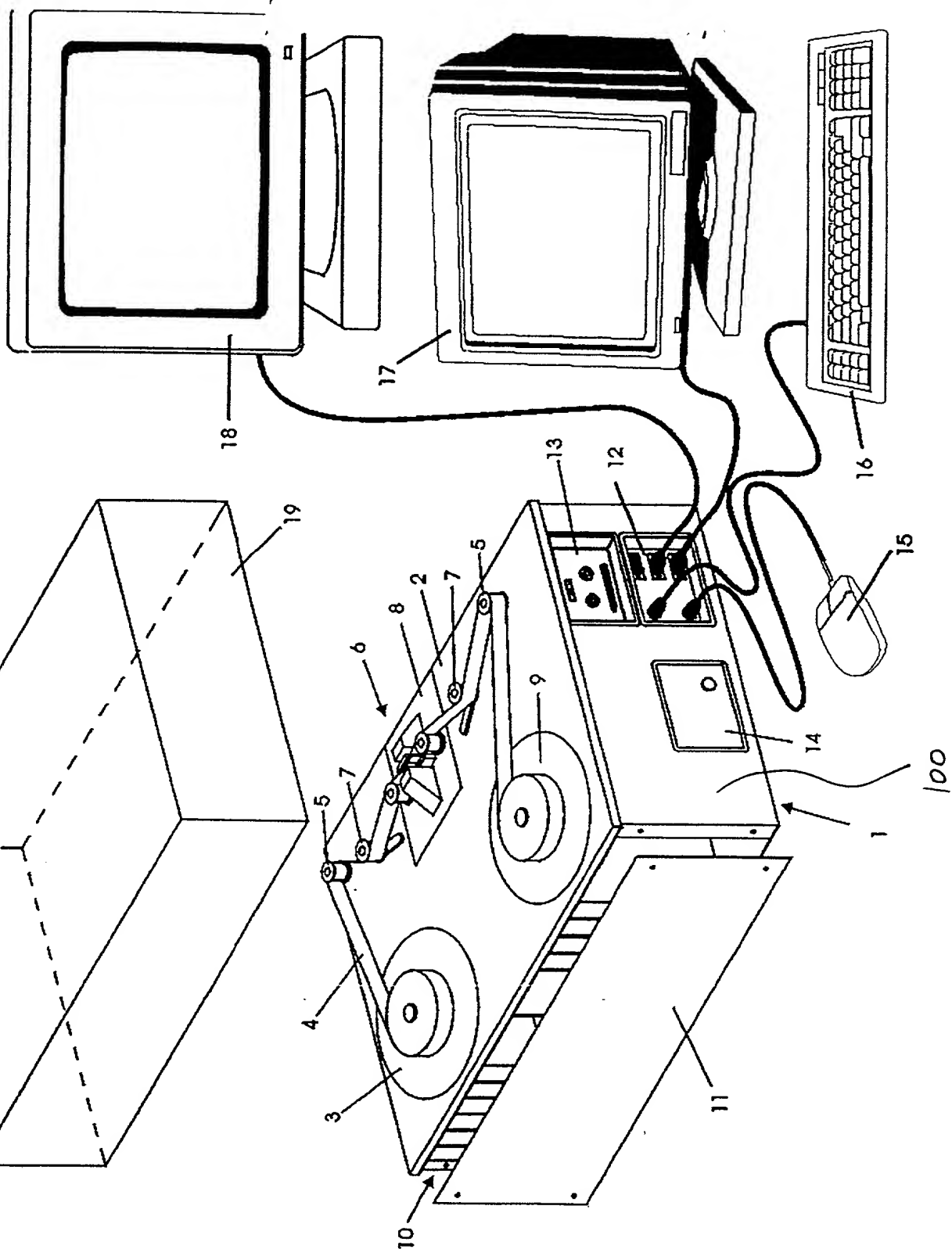


Figure 1

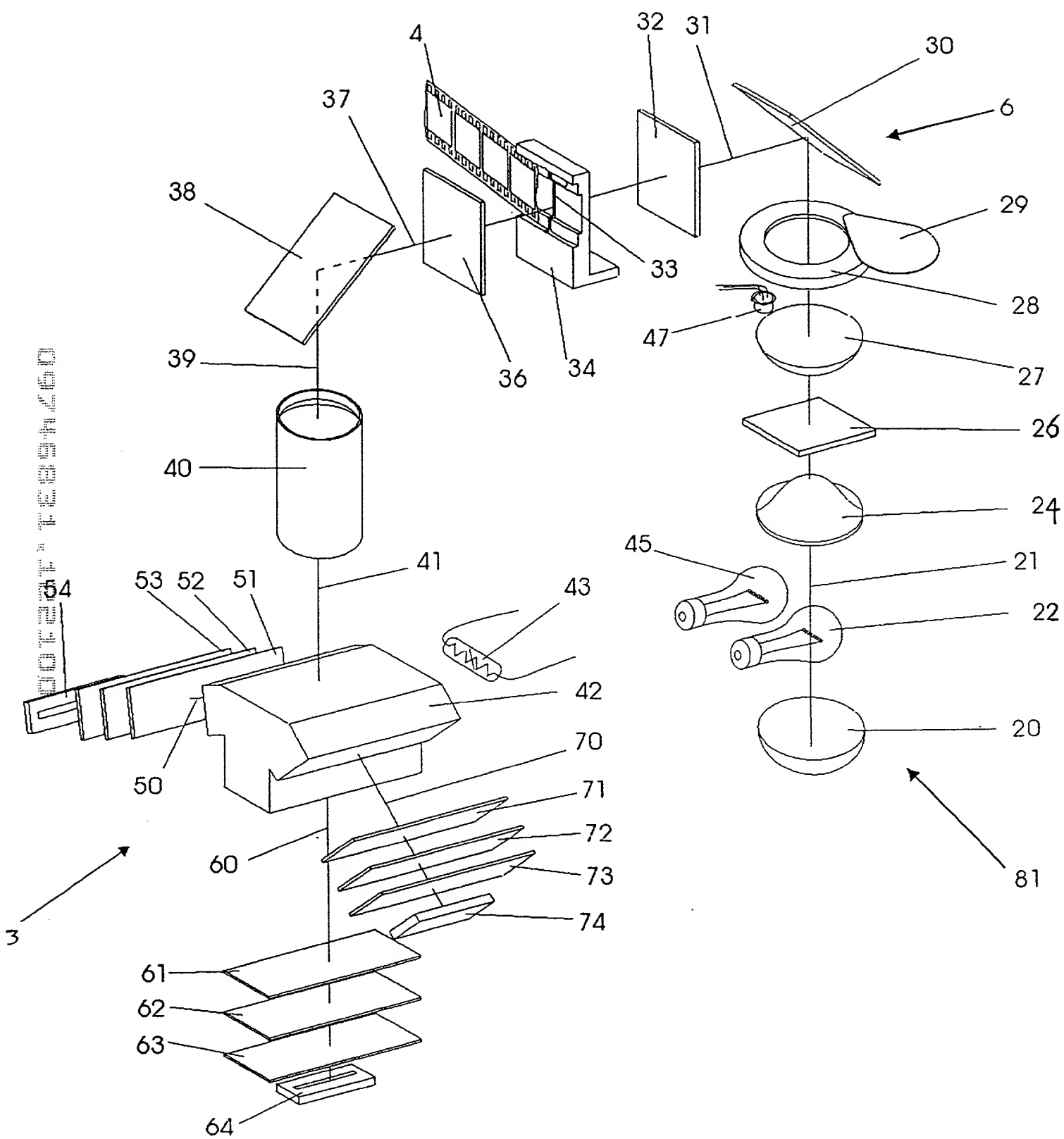


Figure 2

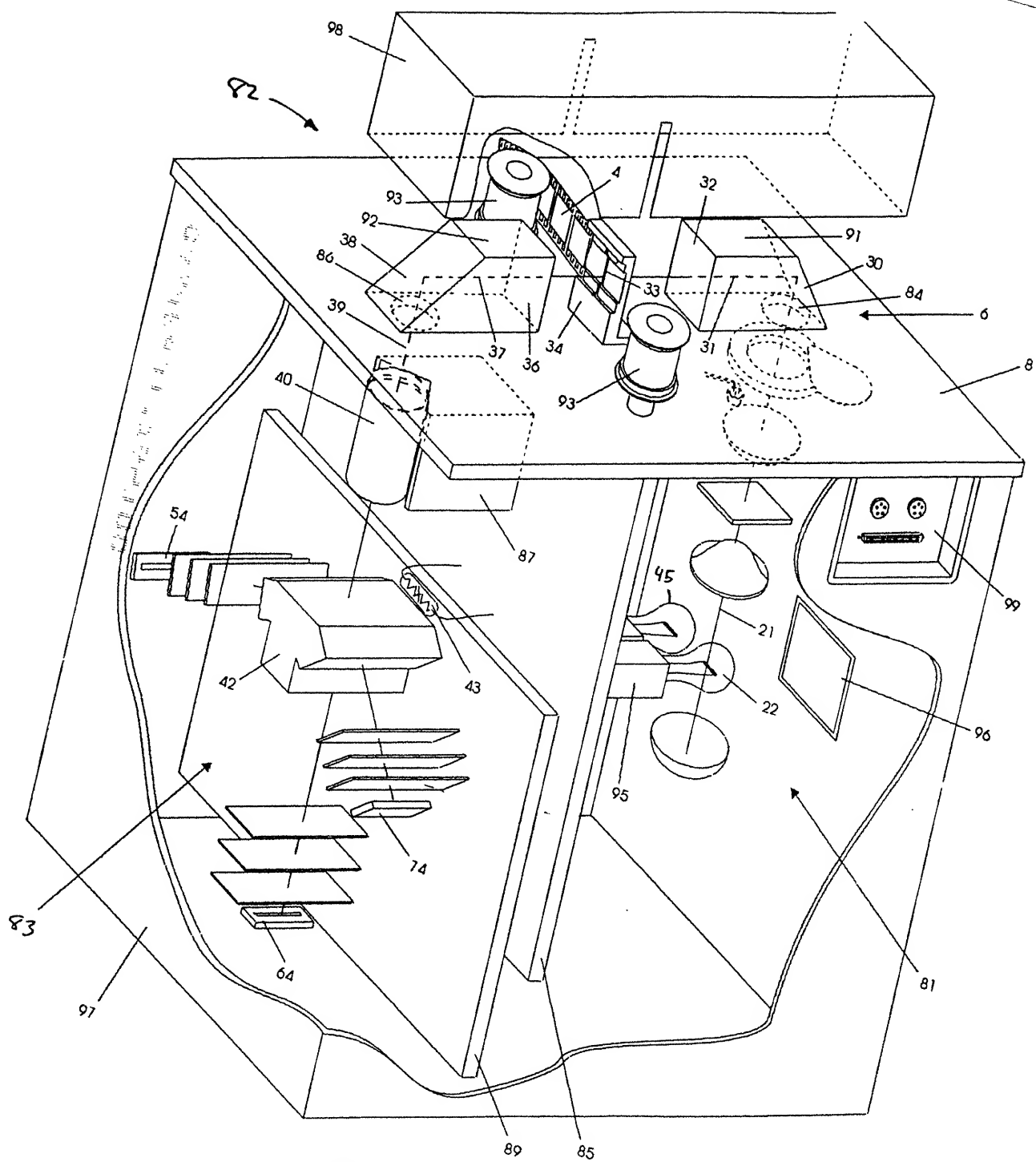


Figure 3

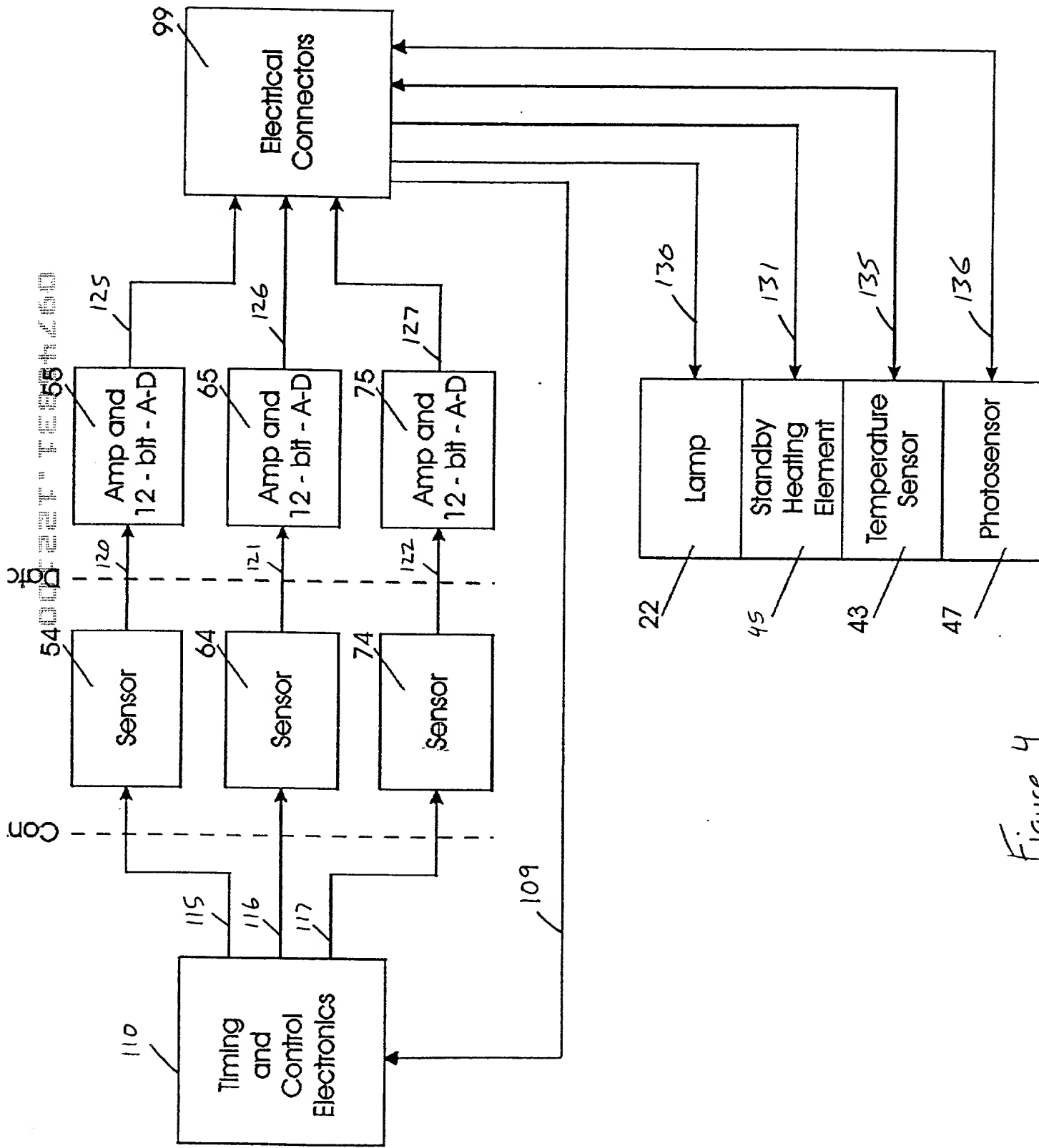


Figure 4

The diagram illustrates a digital color film scanner system 500. The process begins with a film being scanned by a **Mechanics & Optics** unit 521. This unit is connected to a **Position Detection** unit 522 and three color sensor units: **Red Sensors** 54, **Green Sensors** 64, and **Blue Sensors** 74. Each sensor unit is connected to its own **Amps & 12-bit A-Ds** (55, 65, and 75 respectively). The signals from these sensors are sent to an **Illumination & Detection Normalization** block 530, which is part of a larger processing block 500. This block also contains a **Digital Filter** 531, a **Color Conversion** block 532, and a **Pan & Scan Adjust** block 533. The output of the **Pan & Scan Adjust** block is sent to a **Split Screen** block 534. The **Split Screen** block is connected to a **Monitor** 18. The **Monitor** is also connected to a **Removable Storage Media** unit 14. The **Removable Storage Media** unit is connected to a **Data Ports** unit 13. The **Data Ports** unit is connected to a **Convert to Output File or Display Formats** block 535. The **Convert to Output File or Display Formats** block is connected to a **local memory** unit 599. The **Convert to Output File or Display Formats** block is also connected to a **Frame Control** unit 538. The **Frame Control** unit is connected to a **Color Lookup Table Generator** 539, a **Keycode Reader**, and **Operator Controls** 537. The **Color Lookup Table Generator** is connected to the **Color Conversion** block 532. The **Frame Control** unit is also connected to the **Pan & Scan Adjust** block 533. The **Frame Control** unit is connected to the **Split Screen** block 534. The **Frame Control** unit is connected to the **Monitor** 18. The **Frame Control** unit is connected to the **Removable Storage Media** unit 14. The **Frame Control** unit is connected to the **Data Ports** unit 13. The **Frame Control** unit is connected to the **Convert to Output File or Display Formats** block 535. The **Frame Control** unit is connected to the **local memory** unit 599.

FIG. 5

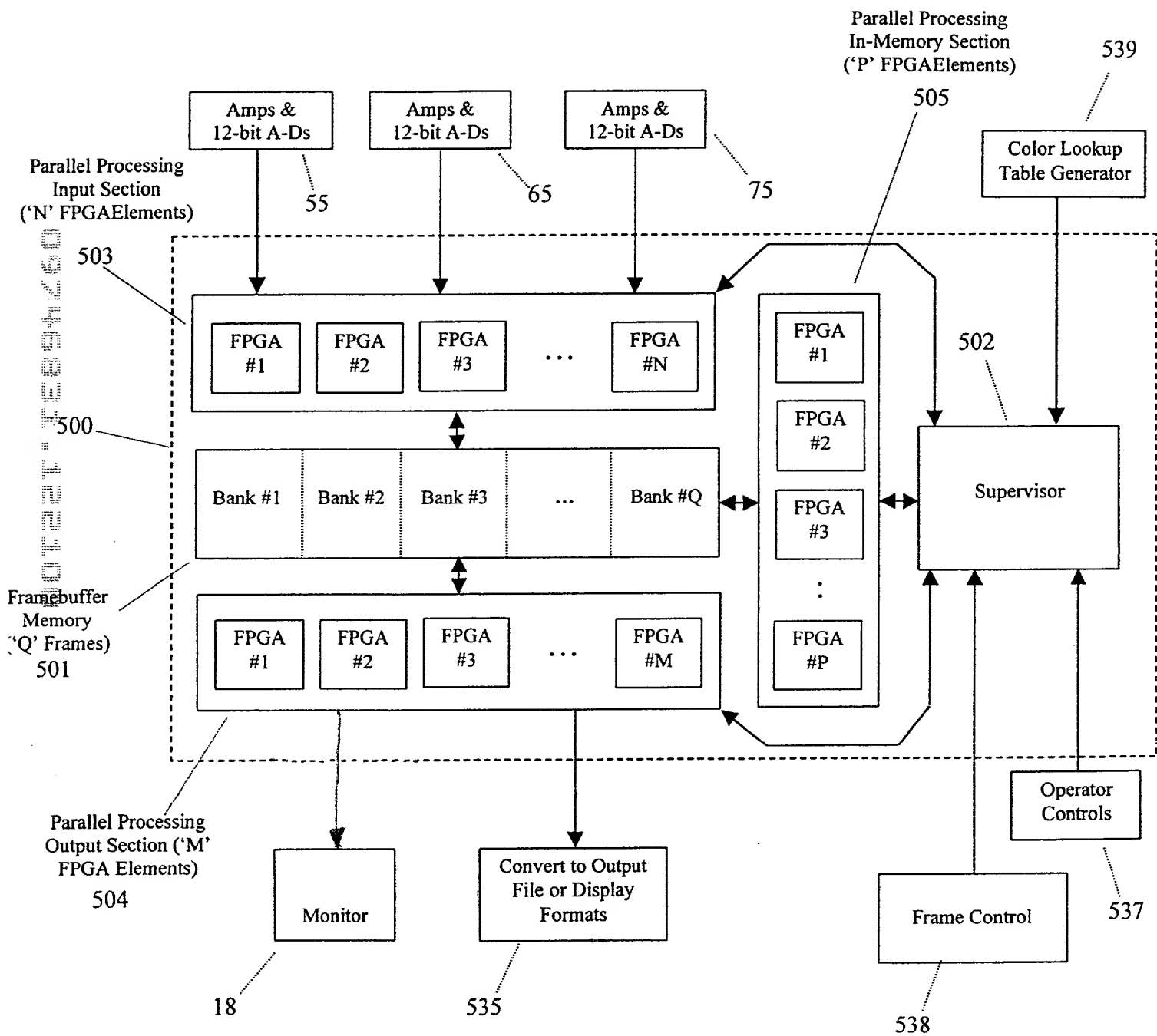


FIG. 6

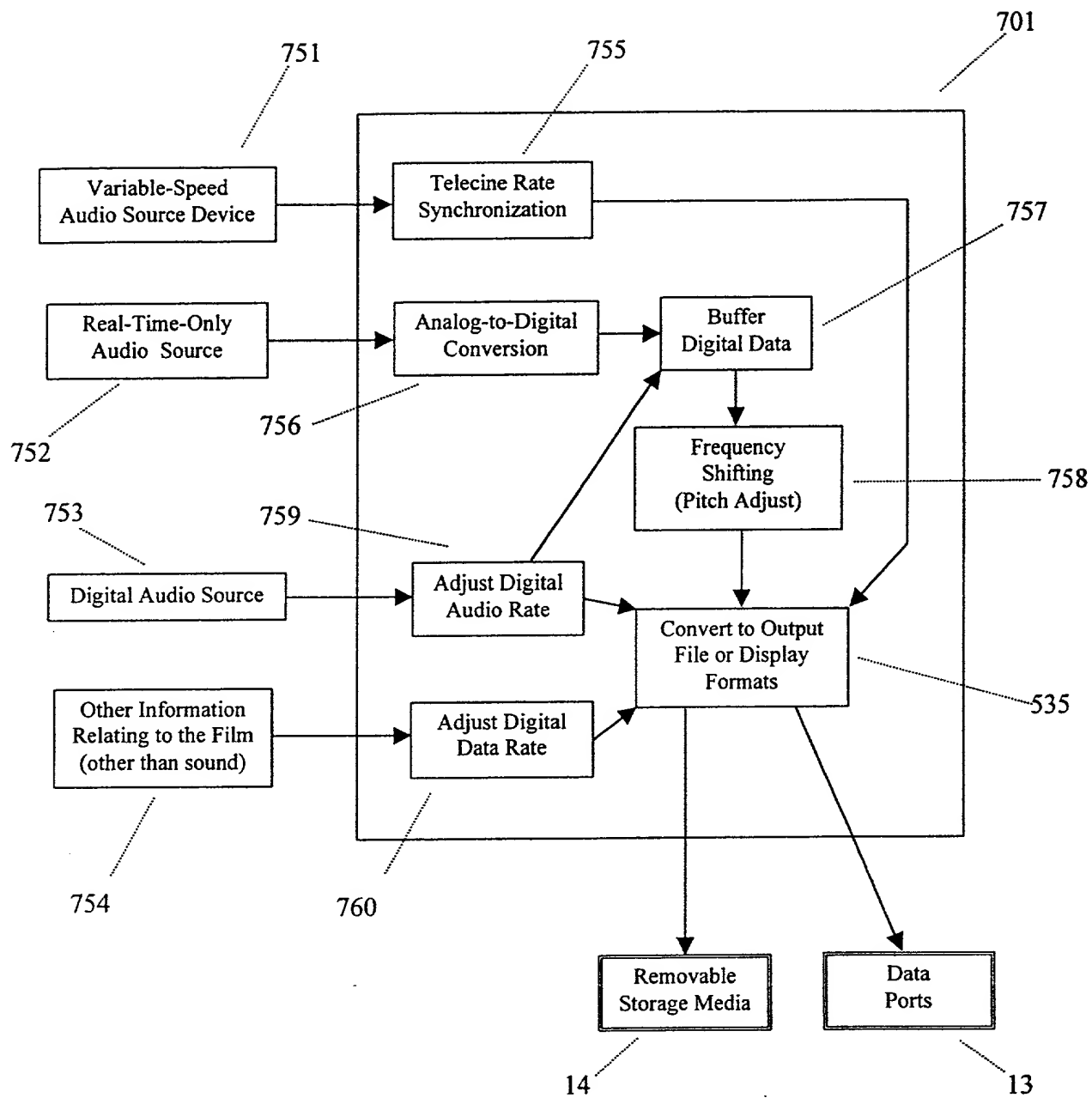


FIG. 7

TABLE A – FILM INPUT FORMATS

35 mm Film Format ¹	Aspect Ratio	Image Width (inches)	Image Height (inches)	Image to Film Frame Ratio
Full-frame (Super 35)	1.33:1	0.981	0.735	1.02
Academy	1.37:1	0.864	0.630	1.18
Anamorphic	1.18:1	0.864	0.630	1.18
1.85:1	1.84:1	0.864	0.469	1.59
3 Perf 1.85:1	1.84:1	0.864	0.560	1.33
TV 4:3	1.33:1	0.816	0.612	1.22
TV 16:9	1.78:1	0.816	0.531	1.41
3 Perf TV 16:9	1.78:1	0.816	0.560	1.33

¹ 4 Perf unless otherwise specified

TABLE B – TELECINE TO SDTV THROUGHPUT RATES

35 mm Film Format ¹	SDTV					
	480 x 640 Scan			480 x 704 Scan		
	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)
Full-Frame (Super 35)	10.73	190.29	7.93	11.80	173.09	7.21
Academy		164.49	6.85		149.62	6.23
Anamorphic		164.49	6.85		149.62	6.23
1.85:1		122.08	5.09		111.04	4.63
3 Perf 1.85:1		145.94	6.08		132.75	5.53
TV 4:3		159.10	6.63		144.72	6.03
TV 16:9		137.66	5.74		125.22	5.22
3 Perf TV 16:9		145.94	6.08		132.75	5.53

¹ 4 Perf unless otherwise specified

Figure 8A

TABLE C – TELECINE TO HDTV THROUGHPUT RATINGS

35 mm Film Format ¹	HDTV					
	720 x 1280 Scan			1080 x 1920 Scan		
	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)
Full-Frame (Super 35)	21.40	63.63	2.65	32.07	28.31	1.18
Academy		55.00	2.29		24.47	1.02
Anamorphic		55.00	2.29		24.47	1.02
1.85:1		40.82	1.70		18.16	0.76
3 Perf 1.85:1		48.80	2.03		21.71	0.90
TV 4:3		53.20	2.22		23.67	0.99
TV 16:9		46.03	1.92		20.48	0.85
3 Perf TV 16:9		48.80	2.03		21.71	0.90

¹4 Perf unless otherwise specified

TABLE D – VIDEO OUTPUT FORMATS

Video Format			Interlace	Aspect Ratio	Frame Rates ¹ (Hz)	Film Input Scan Rate (FPS)	Real-Time Telecine Throughput ²
TV		NTSC	i	4:3	29.97	48	x 5
		PAL	i	4:3	25	48	x 5
		SECAM	i	4:3	25	48	x 5
DTV	SDTV	480 x 640	i	4:3	30	48	x 5
		480 x 640	P	4:3	24, 30, 60	48	x 5
		480 x 704	i	16:9	30	48	x 2
		480 x 704	P	16:9	24, 30, 60	48	x 2
	HDTV	720 x 1280	P	16:9	24, 30, 60	24	x 1
		1080 x 1920	i	16:9	30	18	x ¾
		1080 x 1920	P	16:9	24, 30	18	x ¾

¹with requisite pulldowns ²with film shot at 24 FPS

Figure 8B